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IS 9605 (1992): Alpha-amylase, food grade [FAD 8: Food Additives]

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(पहला पुनरीक्षण)

Indian Standard

ALPHA-AMYLASE, FOOD GRADE — SPECIFICATION

(*First Revision*)

UDC 663·154·31 : 664·022·3

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

February 1992 **Price Group 1**

AMENDMENT NO. 1 APRIL 2011
TO
IS 9605 : 1992 ALPHA-AMYLASE, FOOD GRADE — SPECIFICATION

(First Revision)

[*Page* 1, *clause* 4.3(c)] — Substitute 'net quantity' *for* 'net content'.

[*Page* 1, *clause* 4.3(f)] — Substitute the following for the existing:

'Any other requirement as given under the *Standards of Weights and Measures (Packaged Commodities) Rules,* 1977 and the *Prevention of Food Adulteration Act,* 1954 and the Rules framed thereunder.'

[*Page* 2, *Table* 1, *Sl No.* (iii), *col* 3] — Substitute '1.1' *for* '3'.

[*Page* 2, *Table* 1, *Sl No.* (iii), *col* 5] — Substitute '15 of IS 1699 : 1995' *for* '10 of IS 1699 : 1974'.

[*Page* 2, *Table* 1, *Sl No.* (iv), *col* 3] — Substitute '2.5' *for* '10'.

[*Page* 2, *Table* 1, *Sl No.* (iv), *col* 5] — Substitute '15 of IS 1699 : 1995' *for* '9 of IS 1699 : 1974'.

(*Page* 2, *Table* 1) — Insert the following at the end of the table:

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of This Standard	Other Indian Standards
(1)	(2)	(3)	(4)	(5)
xi)	Cadmium, mg/kg, *Max*	1.5	—	15 of IS 1699 : 1995
xii)	Mercury, mg/kg, *Max*	1	—	do
xiii)	Copper, mg/kg, *Max*	30	—	do

(FAD 8)

Reprography Unit, BIS, New Delhi, India

Food Additives Sectional Committee, FAD 8

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Food Additives Sectional Committee had been approved by the Food and Agriculture Division Council.

Alpha-amylase is added to food products as a starch modifier. It is also added in cereal mash in distilleries and breweries for conversion of cereal starch into sugar. The alpha-amylase is obtained from bacterial and fungal fermentation.

Its nomenclature is as follows:

Number — EC 3211

Recommended Name — α-amylase

Systematic Name — 1, 4-α-D Glucan glucanohydrolase

Reaction — Endohydrolysis of 1-4-α-D glucosidic linkages in polysaccharides containing three or more 1-4-α-linked D-glucose units.

The use of alpha amylase has been permitted under the Prevention of Food Adulteration Act, 1954 and the Rules framed thereunder, for certain foods.

This Indian Standard was first published in 1980. It covered the fungal amylase, *aspergillus oryzae*. The standard has been revised to cover alpha-amylase produced from strains of both fungal and bacterial species.

The enzyme preparations from microbial sources should be produced by the methods, and under suitable culture conditions which ensure a controlled fermentation and prevent the introduction of micro-organisms which could be the source of toxic materials and other undesirable substances.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ALPHA-AMYLASE, FOOD GRADE — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and methods of sampling and test for alpha-amylase, food grade.

2 REFERENCES

The following Indian standards are necessary adjuncts to this standard:

IS No.	*Title*
1009 : 1979	Specification for wheat flour (*MAIDA*) forgeneral purposes (*second revision*)
1070 : 1977	Specification for water for general laboratory use (*second revision*)
1699 : 1974	Methods of sampling and test for food colours (*first revision*)
2557 : 1963	Annatto colour for food products
4684 : 1975	Specification for edible groundnut fiour (expeller pressed) (*first revision*)
5401 : 1969	Methods for detection and estimation of coliform bacteria in foodstuffs
5887	Methods for detection of bacteria responsible for food poisoning:
Part 1	Isolation, identification and enumeration of *Escherichia Coli* (*first revision*)
Part 3	Isolation and identification of *Salmonella and Shigella* (*first revision*)
9504 : 1980	Specification for 1 (+) — tartaric acid, food grade
10524 : 1982	Colorimetric determination of alpha-amylase activity in cereal and cereal products

3 REQUIREMENTS

3.1 General

The organism used for production of amylase shall be strains of fungal and bacterial species approved for the purpose by the relevant International Agencies. The amylase shall be a free-flowing powder, white to off-white in colour and with a mild odour. It shall be soluble in water but practically insoluble in alcohol, chloroform and ether.

3.2 The material shall conform to the requirements given in Table 1.

4 PACKING, STORAGE AND MARKING

4.1 Packing

The material shall be securely packed in hermetically sealed containers. The containers shall be such as to preclude contamination of the contents with metals or other impurities.

4.2 Storage

The material shall be stored in a cool and dry place. The storage temperature should be below 30°C.

4.3 Marking

Each container shall be marked legibly to give the following information:

a) Name of the material, including the words "Food Grade";

b) Name and address of the manufacturer;

c) Minimum net content;

d) Batch or code number;

e) Date of manufacture; and

f) Any other details required under the *Standards of Weight and Measures (Packaged Commodities) Rules, 1977/Prevention of Food Adulteration Rules, 1977.*

5 SAMPLING

Representative samples of the material shall be drawn and conformity to the requirements of the specifications shall be determined according to the method prescribed in Appendix A of IS 2557 : 1963.

6 TESTS

6.1 Tests shall be carried out by the methods specified in col 4 and 5 of Table 1.

6.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1977) shall be employed in tests.

Table 1 Requirements for Alpha Amylase, Food Grade
(*Clause* 3.2)

Sl No.	Characteristic	Requirement	Methods of Test	
			Annex of this Standard	Ref to Other Standards
(1)	(2)	(3)	(4)	(5)
i)	Moisture, percent by mass, *Max*	7·0	—	Appendix A of 1009 : 1968
ii)	Alpha amylase activity in SKB units, *Min*	5 000	—	IS 10524 : 1982
iii)	Arsenic (or dry basis), mg/kg, *Max*	3	—	Cl 10 of IS 1699 : 1974
iv)	Lead (as Pb) on dry basis, mg/kg, *Max*	10	—	Cl 9 of IS 1699 : 1974
v)	Heavy metals, (as Pb), on dry basis, mg/kg, *Max*	40	—	Cl A-5 of IS 9504 : 1980
vi)	Coliform count, per g, *Max*	30	—	IS 5401 : 1969
vii)	*Pseudomonas aeruginosa*	Negative	A	—
viii)	*Salmonella*	Absent (in 25 g)	—	IS 5887 (Part 3) : 1976
ix)	*E. coli*	Absent (in 10 g)	—	IS 5887 (Part 1) : 1976
x)	Aflatoxin, mg/kg, *Max*	0·005	—	Appendix J of IS 4684 : 1975

ANNEX A
[*Table* 1 *Item* (*vii*)]

DETERMINATION OF *PSEUDOMONAS AERUGINOSA*

A-1 MEDIA

A-1.1 Soyabean-Casein Digest Medium

Pancreatic digest of casein	15·0 g
Papaic digest of soyabean meal	5·0 g
Sodium chloride	5·0 g
Agar	15·0 g
Water	1 000 ml

*p*H after sterilization 7·3 ± 0·2

A-1.2 Cetrimide Agar Medium

Pancreatic digest of gelatin	20·0 g
Magnesium chloride	1·4 g
Potassium sulphate	10·0 g
Agar	13·6 g
Cetyl trimethyl ammonium bromide (cetrimide)	0·3 g
Glycerin	10·0 ml
Water	1 000 ml

*p*H after sterilization 7·2 ± 0·2

Dissolve all solid components in water and add the glycerin. Heat with frequent agitation and boil for one minute. Sterilize.

A-2 PROCEDURE

A-2.1 To the sample add the fluid soyabean-casein digest medium to make 100 ml, mix and incubate. Examine the medium for growth and if growth is present, use an inoculating loop to streak a portion of the medium on the surface of the cetrimide agar medium plated on petri dishes. Cover and invert the dishes and incubate at 35 ± 2°C for three days. Examine the plates. If none of the colonies have the characteristics listed in Table 2, and conform to the oxidase test in **A-2.2**, the sample passes the test.

Table 2 Morphologic Characteristics in Cetrimide Agar Medium

Test	Characteristic
(1)	(2)
i) Characteristic colonial morphology	Generally greenish
ii) Fluorescence in ultraviolet light	Greenish
iii) Oxidase test	Positive
iv) Gram stain	Negative rods

A-2.2 Oxidase Test for Confirmation

Upon the colonial growth place or transfer colonies to strips or disks of filter paper that have previously been impregnated with N, N dimethyl-p-phenylenediamine dihydrochloride. If there is no development of a pink colour changing to purple, the sample meets the requirements of the test.

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